REMARKS/ARGUMENTS

This is in response to the Office Action mailed May 31, 2007. Claims 1-7, 9 and 13-24 are pending in the application. Claims 6, 7 and 14-22 have been withdrawn from consideration and are canceled herewith. Claims 8, and 10-12 have been previously canceled. Claims 1 and 9 have been amended. Claim 25 is new and supported in the specification at paragraph [0012]. No new matter is added with the amendment. With the entry of this Amendment, claims 1-5, 9, 13, and 23-25 are pending for consideration.

Applicants thank the Examiner for determining that claim 23 is allowable.

I. Claim Objections

According to the Examiner, the disclosure is objected to because of the following informalities: Claims 1-3, 5, 9 and 24 recite acronyms "tdcBC", "pckA", and "ppc". The Examiner asks that in the first recitation, the claims should include the full recitation followed by the acronym in parenthesis. Appropriate correction is required. In response, applicants have amended the claims where the objected to terms are first recited (claims 1 and 9). Withdrawal of this objection is respectfully requested. Claim 9 should be allowable in view of this amendment, which removes the objection and also renders the claim independent of claim 1 and not subject to the obviousness rejection discussed below.

II. Claim Rejections - 35 USC § 103

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moeckel *et al*, US patent 6,107,063 (issued August 22, 2000), in view of Eikmanns *et al,* US patent 6,420,151 (issued July 16, 2002), Palmeros *et al*, 2000 *Gene* 247 255-264, and Debahov *et al,* US patent 4,278,765 (issued August 22, 2000). The Examiner applies this same rejection to claim 24.

The Examiner's basic argument is that Moeckel teaches an *E. coli* strain mutated to have an inactivated tdcBC operon. The Examiner admits that Moeckel does not teach such *E. coli* strain also having inactivated pckA genes. Therefore, the Examiner cites Eikmanns for teaching a threonine producing *E. coli* strain that has an attenuated pckA gene. According to the Examiner, Eikmanns teaches that the attenuation of the pckA gene is advantageous, for the production of L-amino acids, in particular threonine, to eliminate undesirable side reactions. The Examiner further cites Palermos for teaching homologous recombination methods in *E. coli* and cites Debabov for generally teaching methods of genetically engineering strains for producing amino acids. The Examiner concludes that this combination of references renders claims 1-4 and 24 *prima facie* obvious. Applicants respectfully but vigorously traverse this rejection.

In order to sustain a *prima facie* case of obviousness, the cited art must motivate the cited combination and provide a likelihood of success in arriving at the invention through such combination. Although applicants understand that Moeckel and Eikmanns teach two different ways to mutate *E. coli,* applicants do not understand why one of skill in the art would have been motivated to combine such independent methods. In fact, one could argue that each of *Moeckel* and *Eikmanns* would have taught against such combination because their respective methods function successfully for their respective purposes. For instance, as the Examiner has explained, Eikmanns teaches a method to produce amino acids wherein the method eliminates unwanted side effects. Nothing in such disclosure suggests combining this method with yet another, different method, for any reason. Palermos and Debabov teach basic methods and research tools available at the time of the invention; they do not teach a problem that needs to be cured in either of Moeckel or Eikmanns' teachings, particularly a problem that would be cured by the combination of these two references. Thus, they do not provide any motivation to combine Moeckel and Eikmanns. Applicants assert that the Examiner's rejection is based upon impermissible hindsight of knowing the invention and not upon what the prior art itself suggests.

Additionally, it is not clear that one of skill in the art, in fact, would have had an expectation of arriving at the claimed invention based upon the cited references alone or in combination. Moeckel discloses a method for producing L-isoleucine using a mutation in the region of the gene coding for the allosteric domains of threonine dehydrates. By the mutation, threonine dehydratase, which is inhibited by the feedback of the end product of the biosynthetic chain, L-isoleucine, is no longer inhibited by L-isoleucine feedback (See Figure 1, column 2, lines 7-15). Accordingly, threonine dehydrate functions as the degradation enzyme of L-threonine irrespectively of the amount of L-isoleucine. In contrast, according to the present invention, threonine degradation–associated operon (tdcBC operon) is inactivated such that threonine dehydratase cannot degrade L-threonine to ketobuyrate. The present invention functions because of the relationship between the production of L-threonine and the inactivation of the tdcBC operon and the inactivated pckA gene. Moeckle, which involves a completely different mechanism from that of the present invention, would not direct the skilled artisan toward applicants' invention or provide a likelihood of success according to such invention. Eikmanns, which discloses a nucleotide sequence encoding the pckA gene and a method for producing lysine or threonine using a pck gene-defective microorganism, likewise provides no suggestion that its teachings should be combined with an inactivated tdcBC operon. And to do so in view of Moeckle, would have been problematic. For instance, page 4, paragraph [0010] of the instant application, teaches that if the tdcBC operon is not inactivated, the production yield of L-threonine is a problem because the pathways for degradation and intracellular influx of synthesized L-threonine are still activated in the microorganism. The secondary references of Palermos and Debabov do not cure these problems.

Finally, applicants point out that the E. coli of the present invention, which comprises an inactivated tdcBC operan and an inactivated pckA gene, produces a high concentration of L-threonine, even when the concentaration of the glucose in the medium surrounding such E. coli is very high (see paragraph [0012]. Nothing in any of the cited references, alone or in combination, teach this feature of the claimed invention, which is recited explicitly in new claim 25.

In view of these arguments, applicants respectfully request the Examiner to reconsider and withdraw the obviousness rejection of claims 1-4 and 24 and deem such claims allowable. New Claim 25, which depends from claims 1 and 24, is also allowable.

CONCLUSION

The Examiner has stated that claim 23 is allowable. In light of the above amendments and comments, Applicants respectfully request that all rejections and objections be withdrawn and that a timely Notice of Allowance with respect to all the pending claims should be issued in this application.

Should the Examiner believe that anything further is necessary in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event that additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefore are hereby authorized to be charged to our Deposit Account No. 01-2300 referencing docket number **027707.00013**.

Respectfully submitted,

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